ERIC Document Resume	See Instruction Sheet	DATE OF RESUME	DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.
ED002280	N.A.	N.A.

4. AUTHOR(S): Popham, James W., and Baker, Eva L.

5. TITLE OF DOCUMENT ABSTRACTED: Value of Pictorial "Embellishments" in a Tape-Slide Instructional Program

6. PUBLICATION TITLE: N.A.

7. EDITOR(S): N.A.

8. PLACE OF ORIGIN
ORG. California Educational Research Association Annual Meeting
ST. Santa Rosa, Calif.
CITY, STATE

9. PUBLISHER OR SOURCE
University of California
Los Angeles, California

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
N.A.	N.A.	3/65	4

TELE. EXT.
INST/LOC CODE

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TYPE OF REPORT
PROPOSAL ☐
IN-PROGRESS ☐
FINAL ☒
FOLLOW-UP ☐

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR: Report

16. INDEXING TERMS (6-12)

instructional technology	audiovisual aids		
audiovisual education	tape-slide instructional programs		
pictorial embellishments	teacher training		

17. ABSTRACT (MAX. 250 WORDS)

The report of a study conducted to determine whether embellished visual segments of an instructional program would have more impact on the learner in his effective response to the total stimulus situation was presented.

The program used in the study dealt with the topic of behavioral objectives. It was designed to teach preservice and inservice teachers to identify properly stated instructional objectives and to convert nonbehavioral objectives into these specific terms. The program consisted of a tape-recorded narration of 25 minutes which was accompanied by 36 2" by 2" slides. One set of slides was prepared in cartoon form with color and included humorous illustrations in addition to the verbal content. The other set consisted of the same verbal material but without additional embellishments.

The criterion measures used were: the Instructional Objectives Preference List (IOPL) which measured the extent to which the student valued behaviorally stated objectives; the students' responses on an anonymously completed questionnaire which required rating the style of presentation in terms of learning, interest, and enjoyment; and two tests of knowledge of behavioral objectives.

Each group was asked to complete the IOPL and the two knowledge examinations. The program was then presented. Half of the subjects saw slides which contained printed titles only; the other half saw the embellished version. The same taped narration was played for all groups. The IOPL was administered again.

The results of the experiment showed that the knowledge acquired by plain and embellished sequences was not substantial, but responses to effective measures significantly favored the use of the embellished materials.

ERIC No.

18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

INSTRUCTIONAL TECHNOLOGY - U.S.C.
2764

Presented at the Annual Meeting of the California Educational Research Association

Santa Rosa, California; March 12, 1965

ED002280

VALUE OF PICTORIAL "EMBELLISHMENTS" IN A TAPE-SLIDE INSTRUCTIONAL PROGRAM

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Recent emphases on product research and the empirical validation of instructional materials have raised many questions concerning the most efficacious combinations of stimulus properties. In the field of pictorial representations the possibilities are myriad.

There is little real evidence to guide one's choices in the practical problems of what and how much to include in pictorial presentations. Research has been conducted in this general areal but directed toward the relative differences in knowledge gained from plain and embellished versions of instructional presentations. Our intuition tells us that an artistic rather than prosaic presentation should have a different effect upon the viewer. But the character of this effect is conjectural.

It may be that non-essential but pleasant visual embellishments might reduce potential learning by distracting the learner from the primary focus of the presentation. Or it is equally possible that while minor differences in knowledge acquisition would not alone warrant the additional expense of preparing more ornate visuals, the effects of such presentations might be beneficial in the affective area. The embellished versions might engender content and/or procedure approaching tendencies on the part of the learner which would influence his receptivity to future instruction--either further instruction on the same topic by different procedures or additional instruction by this particular procedure with different topics. It was with the supposition that embellished visual segments of an instructional program would have more impact on the learner in his affective response to the total stimulus situation that this study was conducted. It was predicted that differences in knowledge acquisition produced by plain and embellished sequences would not be substantial, but responses to affective measures would significantly favor the use of the embellished version.

Materials

The program employed in the study dealt with the topic of behavioral objectives and was designed to teach pre-service and in-service teachers to identify properly stated instructional objectives and to convert non-behavioral objectives into these specific terms. The program consisted of a tape recorded narration of 25 minutes which was accompanied by 36 2 x 2 slides. These slides contained both visual reiteration of the content of the narration and opportunities for the students to practice the criterion behaviors.

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1 See A. A. Lumsdaine in N. L. Gage, Handbook of Research on Teaching Rand McNally and Company, Chicago, 1963.

One set of slides had been professionally prepared in cartoon form with color and included humorous visual illustrations in addition to the verbal content. For purposes of experiment, another set of slides was prepared which consisted of the same verbal material but without additional embellishment other than colored backgrounds.

Criterion Measures

Four criterion measures were employed. The first was the Instructional Objectives Preference List (IOPL), designed to measure the extent to which the student values behaviorally stated objectives. This inventory consists of a series of 20 instructional objectives and asks the student to rate each on a five point scale according to usefulness. High scores on the IOPL reflect preferences for behavioral rather than nonbehavioral goals.

The second criterion was subjects' responses on an anonymously completed questionnaire which required rating the mode of presentation (tape recording plus slides) in terms of learning, interest, and enjoyment. Another item informed the subject that approximately eight other relevant presentations of this sort were available and asked how many of these he would like to see.

The final two criteria were tests of knowledge of behavioral objectives. One required the student to identify behaviorally stated objectives when presented with a list of 20 instructional goals. The other called for the student to re-state two broadly phrased objectives in specific, behavioral terms.

Subjects

All subjects were students enrolled in the teacher preparation program at the University of California, Los Angeles. Four replications of the experiment were performed with four groups as follows: sample I were 19 art and music majors preparing to be secondary school teachers; sample II consisted of 22 elementary education majors; sample III was comprised of 39 students planning to teach at the junior college level; sample IV was composed of 23 elementary education candidates. Within the sample of each replication the subjects were randomly assigned to either treatment.

Procedure

The procedure for each group was essentially the same. The subjects were first asked to complete the IOPL and the two knowledge examinations on a pre-test basis. Then the program was presented. Half of the subjects saw slides which contained printed titles only while the other half saw the embellished version. Duplicate copies of the taped narration were played for all groups.

Following the program the Instructional Objectives Preference List was again administered. The tests on ability to identify behaviorally stated objectives and to rewrite broad objectives in specific terms were also readministered. Finally, the subjects were asked to fill out the procedure preference questionnaire.

Analysis

For purposes of analysis the data were considered to represent seven criterion variables: (1) writing behavioral objectives, (2) identifying behavioral objectives, (3) scores on the IOPL, (4) rating of program according to learning, (5) rating of program according to interest, (6) rating of program according to enjoyment, and (7) desire for additional programs of a similar nature.

For each criterion variable a nonorthogonal analysis of variance was performed, with pre-test scores serving as a covariate for the first three of the variables listed above. In each case F values for (1) method (embellished versus unembellished), (2) classes (the four samples), and (3) interaction were computed. While primary interest centered on the possibility of differences associated with the treatment differential, this analysis permitted tests for possible interaction between the treatment and the four classes. Means and standard deviations were also computed for the samples pooled according to method.

Results

As predicted, there were no significant method differences for the first two variables which represented achievement. There was also no method difference in IOPL scores representing attitude toward the subject matter. On two of the four questionnaire items, however, there were significant differences in favor of the embellished version of the program. Ratings of the program in terms of interest and enjoyment produced significant F values for method. None of the interaction was significant. A summary of F values for the seven criterion variables is presented in Table 1.

Table 1. F Test Results on Seven Criterion Measures for 103 Subjects.

Criterion	F Values According to Source of Variation		
	Method	Class	Interaction
1. Writing Behavioral Objectives #	2.27	1.78	1.35
2. Identifying Behavioral Objectives #	1.88	5.10**	.72
3. Performance on the IOPL #	.15	3.00*	2.31
4. Rating of Program according to learning	1.60	5.38**	2.54
5. Rating of Program according to enjoyment	9.27**	2.45	.31
6. Rating of Program according to interest	4.96*	4.98**	.38
7. Preference for additional programs	1.59	2.80	.04

Pre-test score used as control variable in analysis of covariance.
* $p < .05$, ** $p < .01$

The means and standard deviations of each of the control variables for the embellished and unembellished versions of the program are presented in Table 2.

It should be noted that a high score is desirable on the first three measures, but a low score is desirable on the latter four criteria. The predicted results on the anonymous questionnaire were present, that is, the embellished version received consistently more positive mean ratings than did the unembellished version.

Table 2. Means and Standard Deviations on Seven Criterion Measures for 50 Subjects Viewing the Embellished Program and 53 Subjects Viewing the Unembellished Program.

Criterion	Embellished Group		Unembellished Group	
	$\bar{X}$	s	$\bar{X}$	s
1. Writing Behavioral Objectives	2.0	0	1.9	.5
2. Identifying Behavioral Objectives	17.2	1.8	16.9	2.2
3. Performance on the IOPL	91.2	5.9	90.0	8.8
4. Rating of program according to learning	1.7	.9	1.9	.8
5. Rating of program according to enjoyment	1.8	1.0	2.2	1.0
6. Rating of program according to interest.	1.9	1.0	2.5	1.1
7. Preference for additional programs	2.0	1.2	2.3	1.2

Discussion

Results of the experiment were in accordance with the prediction that the treatment differential would not result in achievement differences between the subjects, but would result in differences of an affective nature. Responses of subjects to all four of the items on the anonymous questionnaire were in the anticipated direction, namely, those who saw the embellished version of the program were more favorably disposed toward the instructional procedure than their counterparts who saw the unembellished version. On a five point rating scale (excellent to poor) both treatment groups rated the program at approximately 2.0 or good, but in each instance the embellished program was rated higher. In two cases, students professed interest and enjoyment of the program, [illegible] the difference was significant.

An analysis of the data suggest that there may well be advantages in using embellished pictorial material with instructional programs. Whether these advantages justify the added costs of such materials hinges on questions such as the tolerance of learners for exposure to plain visuals over an extended period. Further research on this question, of course, must be undertaken. This modest experiment, however, should act as a deterrent to those who would quickly write off pictorial embellishments as merely increased cost without added merit.

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